

White Paper Report

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Enhancing Dance Literacy: Dance Notation Through Touch Technology
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Project Objectives and Activities

The objectives of *Enhancing Dance Literacy: Dance Notation Through Touch Technology* are to create an editing program for movement notation that harnesses and implements the abilities of touch technology, resulting in the release of the program as a freeware tablet application. We have achieved this through the product of KineScribe, a free iPad app for Laban movement notation. KineScribe has increased accessibility for Laban movement notation software and learning the notation system. We plan to add a few system modifiers to the program in the next few months to enhance usability. Further plans for expanding the program are detailed in the report that follows.

KineScribe reads all scores imported from LabanWriter (the existing desktop software on Mac), and LabanWriter, in turn, reads and edits scores made in KineScribe via iTunes sync. This exchange is akin to moving back and forth between a word processing program on a computer and on a tablet. KineScribe writes a substantial number of symbols in the Laban movement notation systems of Labanotation, motif, and Language of Dance, to the point that a user can create a score with a sufficient level of detail, and then import into LabanWriter to finish if certain further details are necessary. The app has an “Email score as PDF” command so that if a user has an iPad with a PC computer, instead of a Mac, that user can still export and print the KineScribe scores they create. For many years PC users have been unable to use LabanWriter because it is a Mac program; now, KineScribe enables them to use Laban movement notation software on the iPad that does not require connecting to a Mac in order to use it. Furthermore, although KineScribe is intended for users who have experience with the systems of Laban movement notation, popovers in the symbol palette define each symbol. Thus, if a user is newer to the notation system, or needs a reminder as to what a symbol is, that user can easily find out via the long-touch-activated pop-up glossary in the symbol palette. These features of KineScribe bring Laban movement notation, and the software for it, to a broader audience than the existing desktop software.

The major activities that occurred during the Level I Start-Up grant period were the development, testing, and release of KineScribe. We tested beta versions of the app in studio classes at Reed College, and we solicited tester feedback from users at Reed and from Laban movement notation practitioners. The project website, kinescribe.org, includes a description of the program, a promotional video, an archive of publicity about the project, and a help page with an instructional video and up-to-date instructions for how to use the app.

The proposed audience for KineScribe is researchers, scholars, choreographers, dancers, and students in fields such as dance, theater, and performance studies who use movement as an integral part of their scholarly inquiry. There are aspects of KineScribe that are accessible to K-12 students, but our test group included college students and professionals. Since KineScribe’s release and announcement via the international LabanTalk listserve, practitioners in the U.S., Europe, and South America have expressed interest in using the app in teaching, professional, and workshop environments.

Processes of Evaluation

Proposed evaluation of Start-Up activities included the usability of the program in studio, fieldwork, and classroom settings. We proposed that the evaluation be conducted by gathering feedback about the application's features and usability from notators, researchers, and students primarily affiliated with Reed College, but also with The Ohio State University and the Dance Notation Bureau. The plan for the work proposed in the Start-Up grant application was in three phases as follows: programmer works through initial development of the software; programmer and project director exchange feedback about the program and fix bugs; programmer and project directors release the free program, incorporate feedback from users, and subsequently expand the program. All of our test groups were relatively small, and so for future tests we recommend larger test groups; however, the feedback we received was substantial and detailed.

David Ralley, the contracted programmer, and I exchanged feedback throughout the process with many drafts of the app. To find beta testers, we sent an invitation for testers over the LabanTalk listserve and contacted individual notators who we thought would be interested. The KineScribe beta version took longer to complete than we anticipated, resulting in contacting testers during the summer. Many users who initially expressed interest were unable to follow through in the process, resulting in a smaller beta testing pool than we anticipated. We incorporated user feedback and substantially expanded the app from the beta version to the app release.

Questions for user feedback included the following:

How often do you use your iPad? All the time Daily Weekly Occasionally Rarely

For what tasks do you use your iPad? (Email, word processing, reading books/PDFs, photos, etc)

1. What features of KineScribe did you find easy to use and that worked well?
2. What features of KineScribe did you find difficult to use?
3. What bugs did you come across in the software (things that do not work properly)?
4. How will you use KineScribe in your teaching or professional work?
5. What suggestions do you have for future versions of KineScribe?
6. Please include anything else you would like to add.

Responses from professional beta testers in summer 2013 (n=5) overwhelmingly commented on the amount of work they would be able to do with the ease of bringing Laban movement notation into the dance studio or fieldwork—in dance technique classes, improvisation classes, rehearsals of choreography, Laban Movement Analysis classes, Labanotation classes, and potential work with creative movement for children—due to the portability of the tablet and the ease of the interface. One commented on the way that the program can connect practitioners in various areas of Laban Studies, such as Labanotation, motif, Language of Dance, and LIMBS. For what

features worked well, the users commented on KineScribe's clear interface and button placement, the amount of control they felt they had over the size and placement of the symbols, the kinesthetic connection they felt with the symbols due to the fingerstrokes and touchscreen interface, the ability to select and change the characteristics of the symbols, the discoverability of the program's functionality, and the aesthetic attractiveness of the scores they made. Users generally encountered difficulties with resizing symbols. We incorporated feedback by fixing individual bugs the testers found, ranging from symbol inaccuracies to the symbols acting differently or freezing when the screen is zoomed in and zoomed out, and by changing the size of the symbols' resize handles to enable the resizing commands to be more responsive. This beta version did not include the ability to notate on the structured staff, which many testers requested; the final version includes many staff options.

Work with undergraduate students at Reed College showed similar results. I brought beta versions of KineScribe into an introductory modern dance technique class containing students with no previous dance training or elementary dance training (fall 2012, n=16), and a Labanotation class containing students who were intermediate-advanced dancers and elementary notation students (fall 2013, n=4). In the dance class, I instructed my students, in pairs, to choreograph a short phrase, and then to notate the motif (general idea) of it in KineScribe. They then traded their iPad with another group and learned the other group's score. At the end, all four dancers who worked with each score performed at the same time. Since a motif is a general idea of a movement phrase instead of structured notation of exact details, the students' performances of the phrase material had similarities (they all dropped to the ground and did a forward roll at the same time) and differences (they used divergent ways of moving forward). The students were able to see how sharing motif scores in KineScribe opens creative possibilities for dance making.

In the notation class, my students read each other's structured Labanotation scores that they wrote based on choreographic material they generated. They wrote some in KineScribe, and most in LabanWriter synced to the iPad. Due to time constraints, we were unable to include certain symbols in this version of KineScribe; some of these were symbols that my students used in their scores, so they were not able to notate in KineScribe as much as I anticipated. Each of my students had their own Mac laptop, but none of my students had their own iPad; although I was able to use a class set of iPads for in-class work, my students did not have as immediate access to the iPads outside of class time to notate their own choreography. However, in class, KineScribe enabled them to zoom in on simple scores they made in KineScribe or more complex ones they synced from LabanWriter to see and make certain details, and also to change the level of a movement on the fly if they chose to do so. I used KineScribe to project scores and lessons onto the studio wall (via a VGA connector for my iPad to a projector) during class. First, this enabled me to give my students clarifying examples during explanatory lectures of Labanotation theory. Second, the projection allowed my students to have hands-free scores when learning an established dance, so that they could freely move their arms and head without losing a hand to holding the notation. I played the dances' music through the iPad as well, so I only needed one device for class. Although my students used LabanWriter more than KineScribe, they found KineScribe easier to use, both for the nature of the interface and the intuitive discoverability of the functionality. These situations show that KineScribe is the first step in moving Labanotation from paper to digital format; these basic classroom interactions will build literacy for these tools early in students' studies in order to push them further into it at more advanced levels.

Due to the timeframe and budget of the project, we had to make choices based on what we had available to us within the logic of the interface. There are aspects that we would like to work through further to make a more smooth user experience, and there are elements we would like to add to make a more detailed score in KineScribe. The development ran longer into the grant period than we anticipated, which resulted in a shorter time frame for testing. As with any software tool, we negotiated a lot of time spent on trial and error, on keeping track of bugs in the software, and on new bugs that appeared when an existing bug was fixed. The release of the app through the Apple App Store also took longer than we anticipated.

One aspect of usability that became clear through the testing process is that a user's familiarity with an iPad affects how that user interacts with KineScribe. Users who rarely used an iPad or otherwise had limited experience with a touch interface had a harder time understanding the program than users with iPad familiarity.

Overall, however, the project has been a success. Upon release of the app, one of our beta testers enthusiastically reported that KineScribe had come a long way from the beta version. People seem to be reacting to it with great enthusiasm. We produced a product in KineScribe that will change the way people interact with Laban movement notation and that will work toward pulling dance documentation and digital technologies closer together in the ways outlined above and below. In this way, KineScribe will add dance literacy to the digital humanities.

Future Directions and Best Practices

One of the productive areas of the process of developing and building KineScribe is that we encountered questions of how we wanted to introduce users to notation based on how KineScribe functioned. How does this function, for example, also discipline and dictate how users interact with the notation in a way that is different from how current users have been trained to interact with the notation on paper or in the LabanWriter desktop program? This project reveals potential for future endeavors beyond KineScribe, and also gestures toward developments in best practices for teaching and using Laban movement notation.

One of these areas for future development is to more closely pair LabanWriter and KineScribe so they have similar functionality, much like the relationship between a desktop word processing program and a tablet word processing program. The functionality will ideally reflect the way KineScribe works, to reinforce the increasingly kinesthetic interaction users have with touch technology and track-pad fingerstrokes. These kinesthetic modes of interface will further reinforce the kinesthetic experience of producing notation symbols and getting inside the notation, so that the translation of movement into symbols, and symbols into movement, will become more intertwined. For example, a user's physical act of drawing the length of a symbol with a finger, which defines the amount of time that movement (represented by the symbol) takes to execute, brings the user into a kinesthetic dialogue with the representation of the movement in the notation. This ability will reinforce the act of notating and reading notation as an enterprise that is at once physical, kinesthetically intellectual, documentary, and generative.

This development in the software will further LabanWriter's/KineScribe's functionality on the computer and on the tablet: it will allow for a wider range of users, including those who do not

have access to or are unable to use tablets and vice versa, and it will enable the use of Laban movement notation in a more powerful way. Ralley rewrote a majority of the LabanWriter code for these notation symbols for KineScribe and brought the code up to current standards in Objective C. With future funding, he will be able to rewrite the existing LabanWriter code, which interfaces like an old draw program, to work more like contemporary software. Currently, LabanWriter operates within an Apple OS 8.6 interface that is enabled to be operable within the Apple OS X system. Even in OS X, LabanWriter looks like a twenty-year-old draw program, which younger users find alienating. Although it is powerful and field-changing software, in the current computer climate LabanWriter is not an intuitive program. It assumes that a user places symbols with a computer mouse, and the operations necessitate a coordination of click-and-drag (or a series of keyboard commands) to place or duplicate symbols. This physicality is becoming outmoded with the predominance of track-pad use on laptops with ever-smaller screens, and finger strokes on tablets. While LabanWriter has a zoom function—a choice of 1x, 2x or 4x—it, too, is becoming outmoded as radial touchscreen zooming becomes the norm. As such, the minutiae that LabanWriter is able to execute become tedious due to their small size and the many steps needed to place detailed symbols. While LabanWriter can notate everything in the Laban movement notation system, many of the details rely on a time-consuming method of building complex symbols from numerous palettes. As usability between computers and tablets becomes more seamless, it will be to the field's advantage to have a continuous dialogue between LabanWriter and KineScribe. Ideally, this includes filling out KineScribe with the full symbol library of LabanWriter, and reworking LabanWriter to have the functionality of KineScribe.

In addition to furthering digital functionality of LabanWriter and the breadth of KineScribe's abilities, the futures of these programs working in tandem show potential for more in-depth usage as well as broader implications in dance literacy and documentation. The symbols in LabanWriter are so-called “dumb” symbols in that the computer reads them as shapes from a draw program that do not carry meaning in the program as a language. In KineScribe, the symbols can know that they are unique, or they can be “smart” symbols that not only know what they are, and can offer symbol-specific manipulations, but are also context-aware, so they know if a modifier applies to them and what body movement is denoted by a cluster of symbols (currently this translation relies on interpretation by the person reading the score). These intelligent symbols could be more easily searched for patterns, and offer more data for export to future programs; thus, in KineScribe and in LabanWriter, a user could scan for individual symbols to search for certain clusters of symbols or syntax in the notation (much like one can search for words in a word processing or PDF document). With symbol identification, in the future, a program like KineScribe could talk to data in video or motion capture software to automatically notate movement in a digital database. Dancers could then read these scores and bring these dances to the stage, or incorporate the scores into research, at a later date. Developing KineScribe is key as a base upon which these longer-range plans may eventually come to fruition.

We plan to apply for additional grant funding to support higher levels of functionality and investigation into multi-program interfacing as detailed above, and an exploration of bringing the app across platforms. Additional features that we would eventually like to include in KineScribe are one that transforms shorthand gestures into notation symbols (similarly to the way some of the non-Roman iPad keyboards have a square on the screen wherein finger strokes are translated into text), a way to insert video into the score files, automatic scrolling with variable speeds, and

a feature that syncs music with the notation and automatically scrolls through the score at the timing of the music.

Through this app, our institution strengthened our relationship with the Dance Notation Bureau (DNB). Conversations with the DNB include how KineScribe can further score reading that supports their efforts digitizing handwritten scores, and the possibilities for more widespread circulation of scores in their current digital library for an increase in bringing established choreography to the stage by directing existing choreographic work from score. KineScribe creates a conduit for potential interfacing between digital repositories and actualizing this work in the dance studio and in performance.

The long-term impact of this project will come through teaching and research. As detailed above, KineScribe opens the door as the first step in a line of possibilities for furthering the technologies available for dance literacy through dance notation and documentation. KineScribe makes it easier to bring dance notation into the studio and the classroom. There is increased interest among doctoral students and scholarly researchers in dance studies of dance scores, notation, and modes of documentation that harness digital modes, and KineScribe appears in the market on this wave of interest. Since KineScribe can be used by populations from children through scholars, it has the potential to support dance notation literacy in K-12 environments so that by the time those students reach college, KineScribe will enable them to deepen the level of inquiry and advance the technical level of the work and discussions involving Laban Studies and dance literacy. This deeper level of working will advance the field on all levels.

How to Acquire KineScribe and Where to Go for More Information

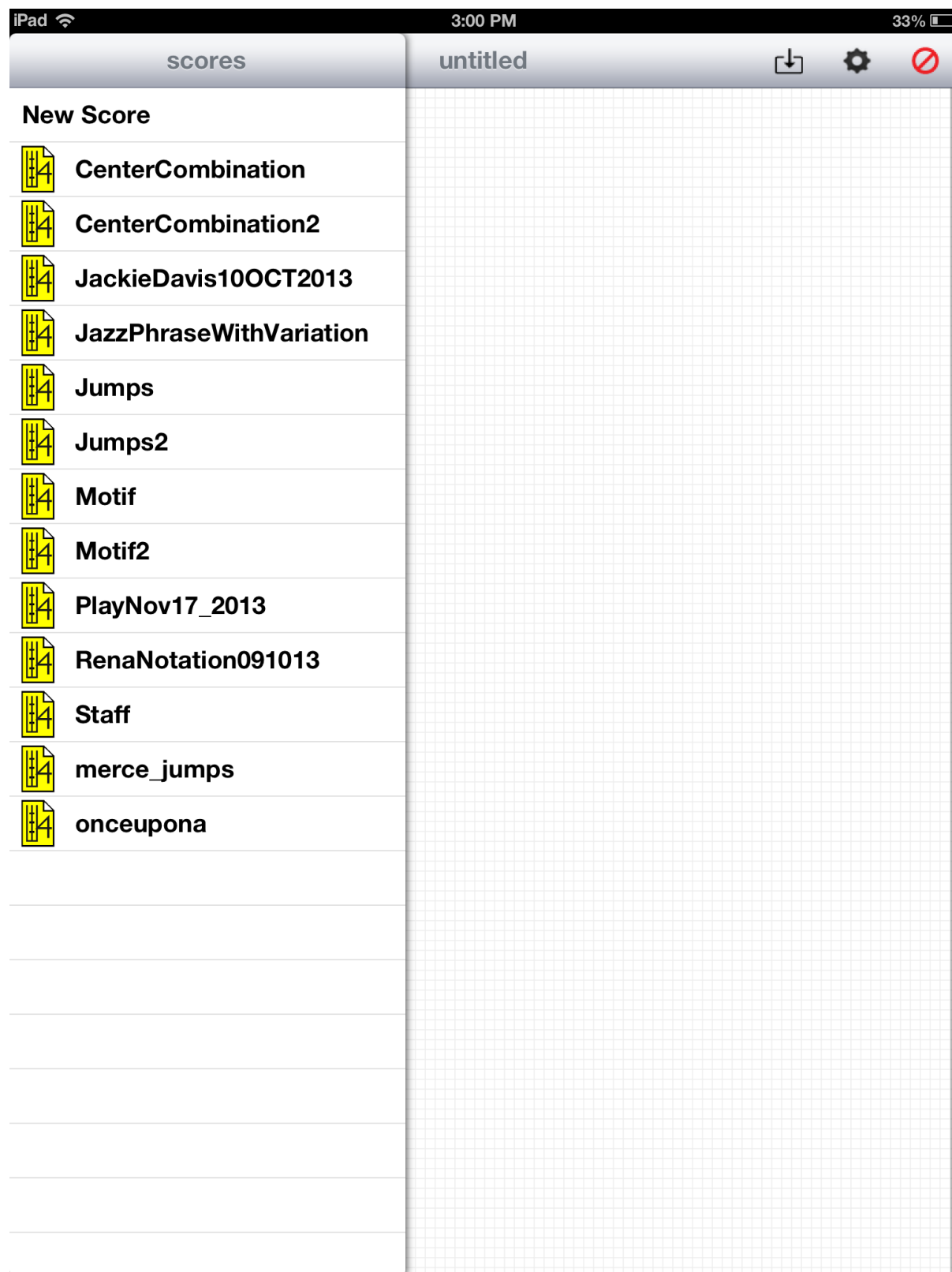
KineScribe is available free from the Apple App Store:

<https://itunes.apple.com/us/app/kinescribe/id721350461?ls=1&mt=8>

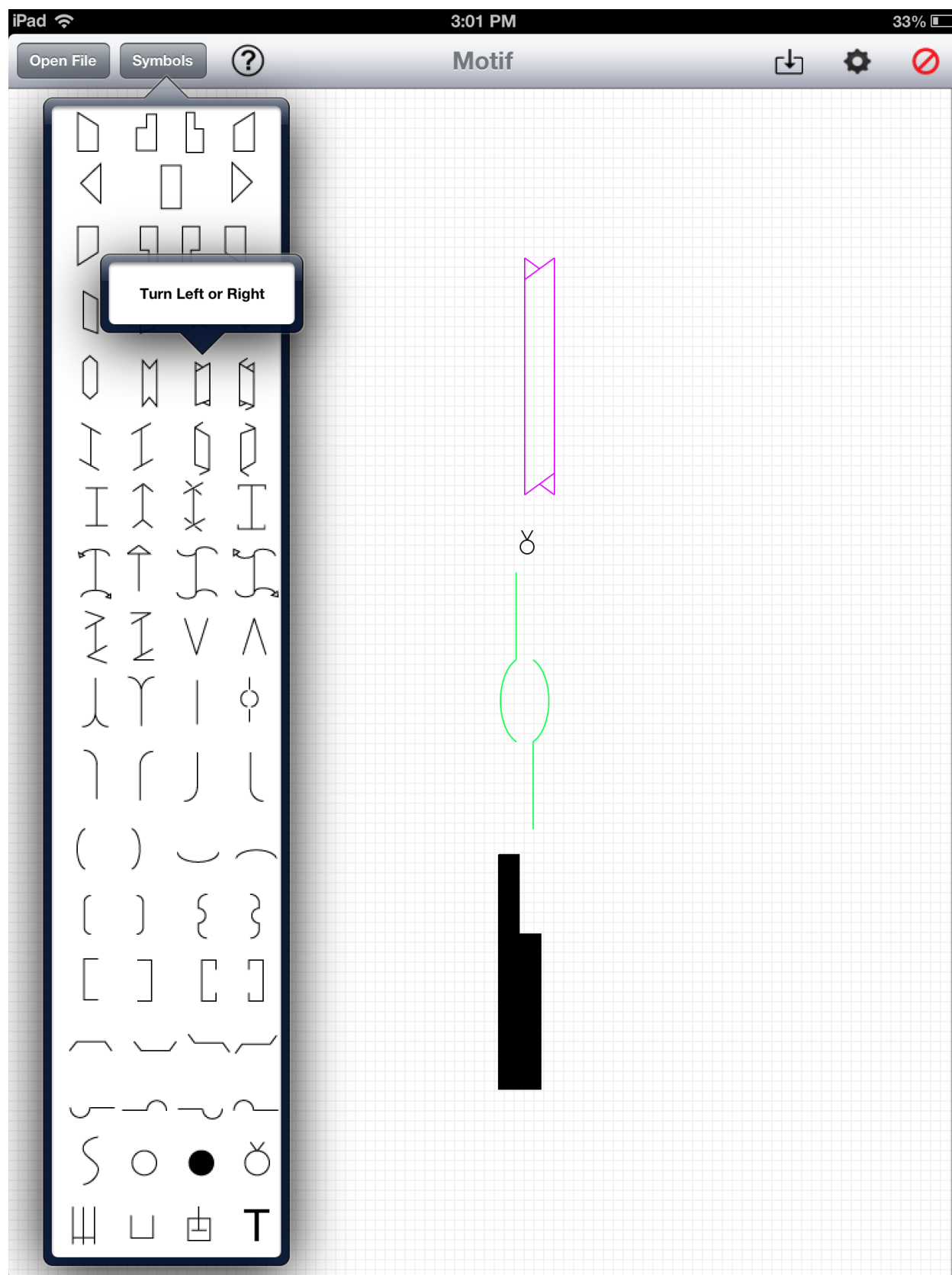
The companion website with informational and instructional videos, links to press, and up-to-date instructions and help for using the app is:

<http://www.kinescribe.org>

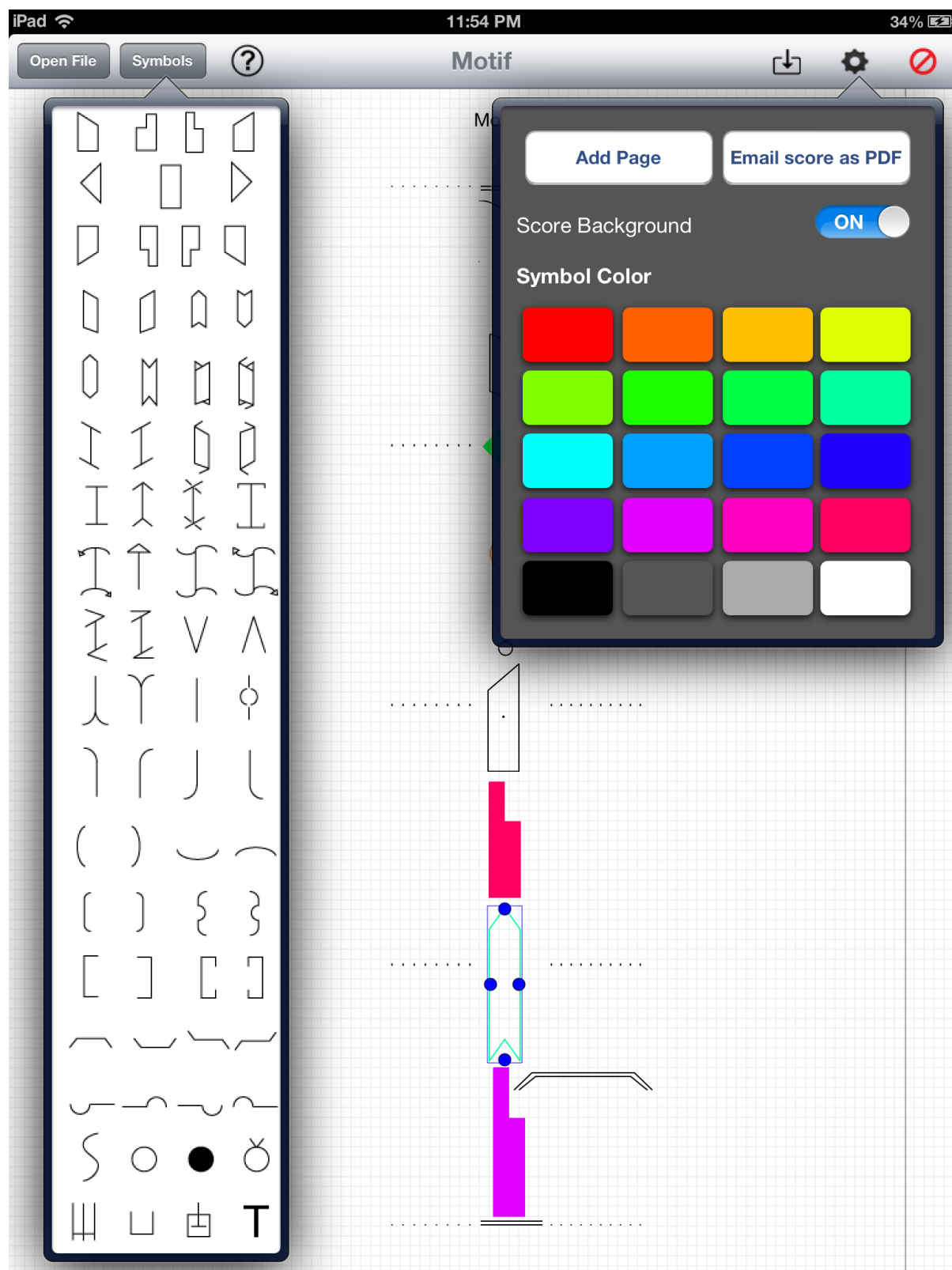
Appendix: Screen Shots from KineScribe



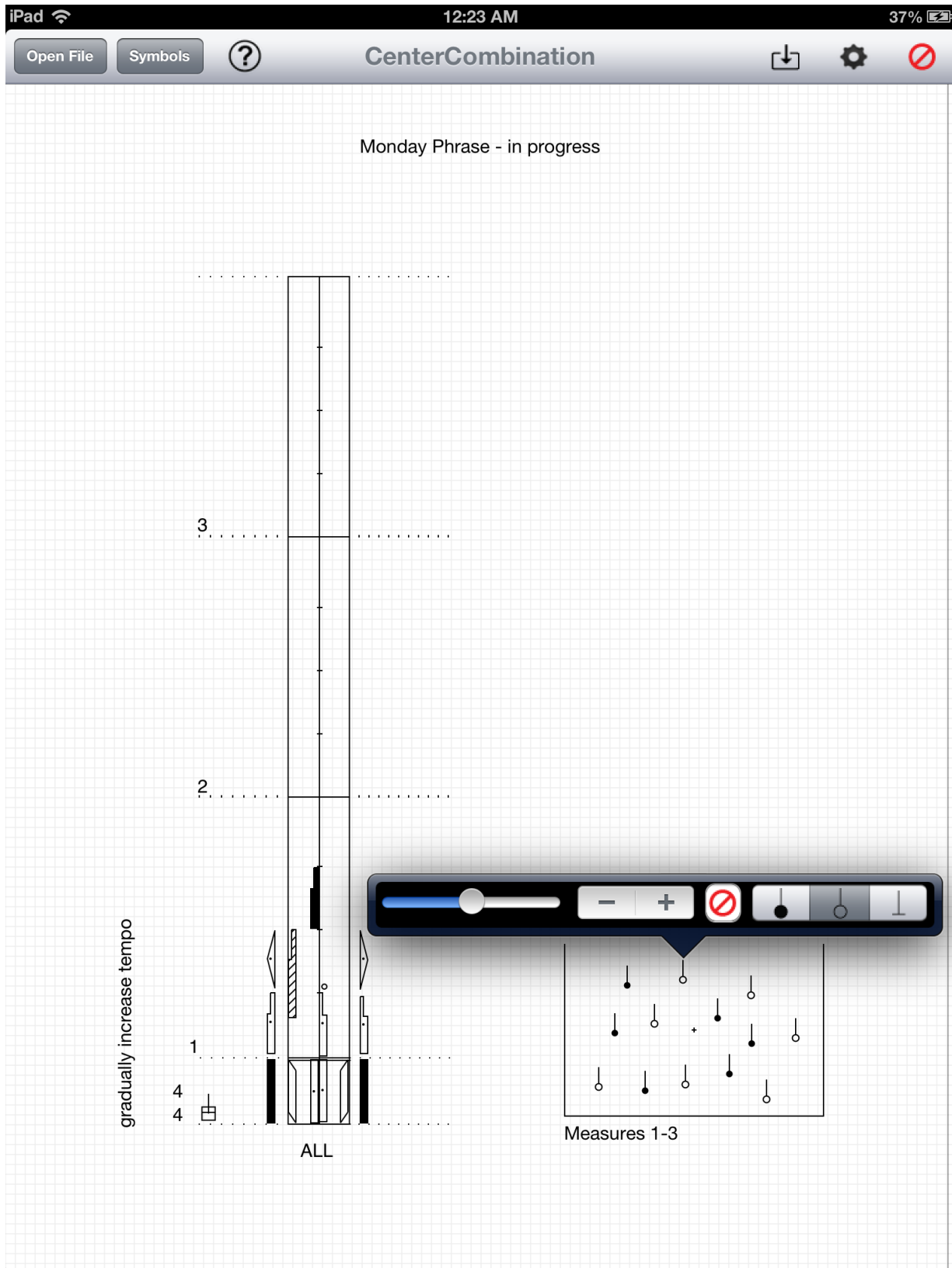
Score list open.



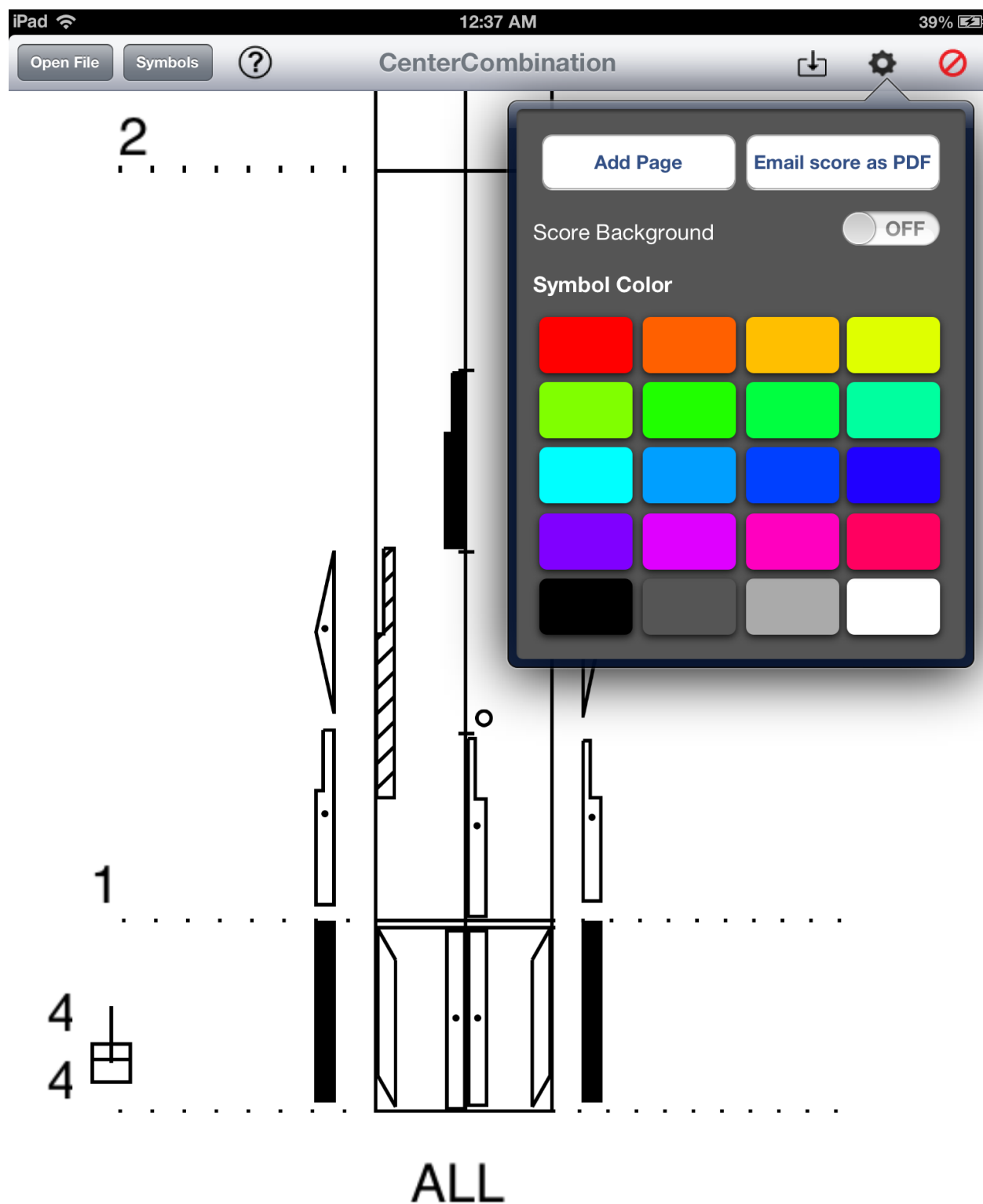
A long touch on each symbol in the Symbol Palette brings up its definition.



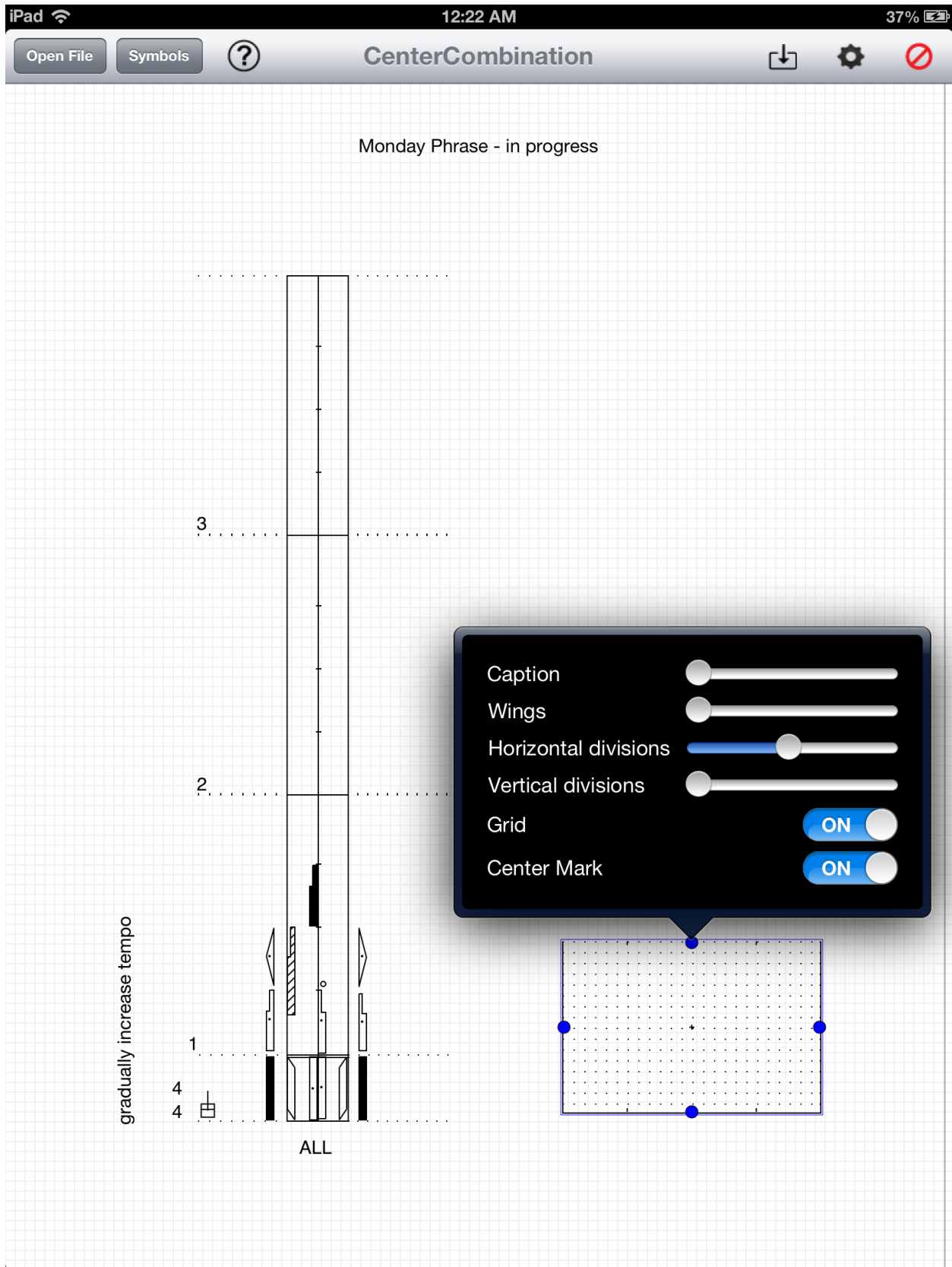
Motif score about movement in the low level. The Symbol Palette and Tools Menu are open.



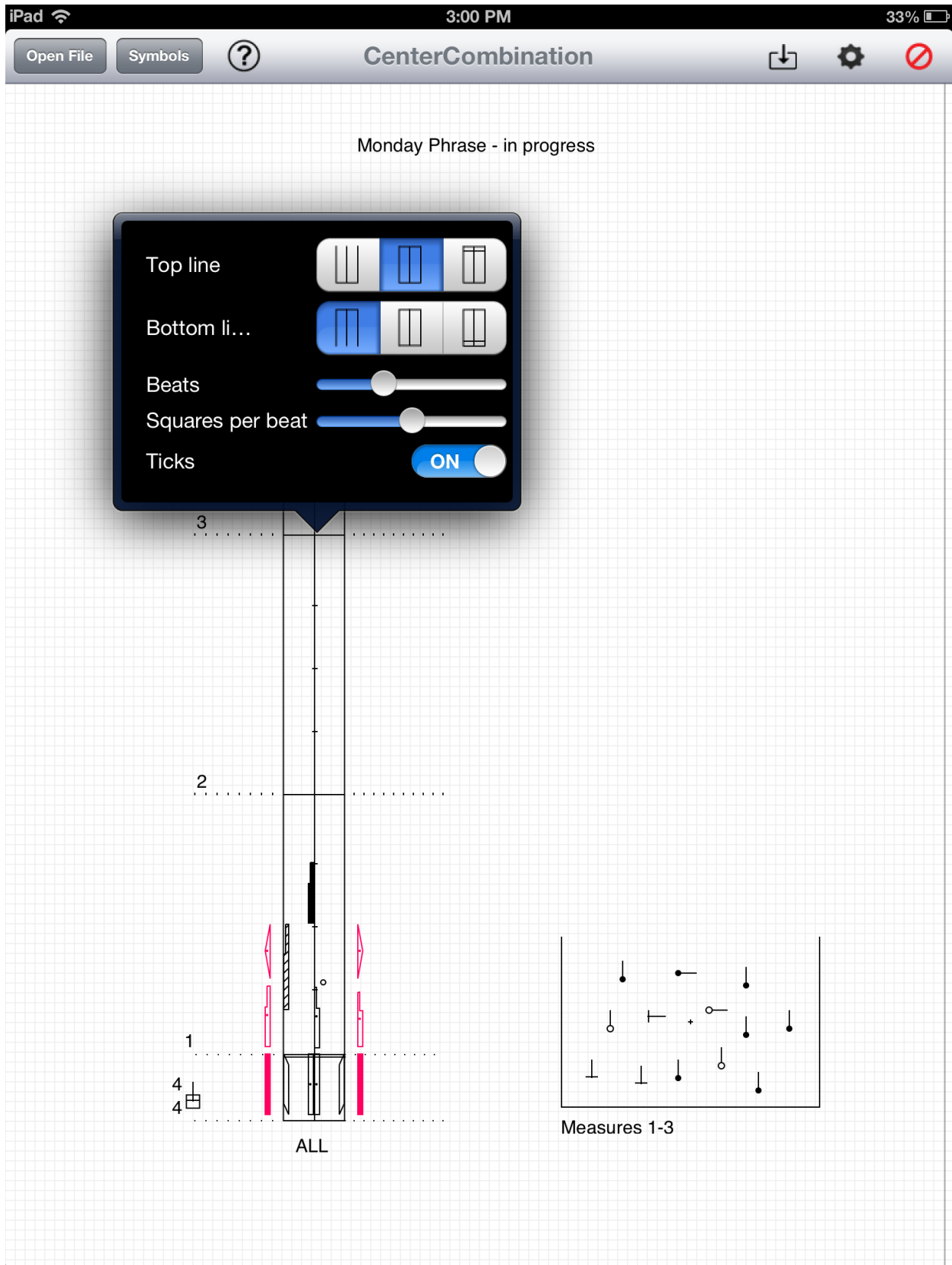
A section of a classroom phrase in Labanotation with graph paper background. The pop-up in the floor plan can change the gender, facing, and size of the pins representing the dancers.



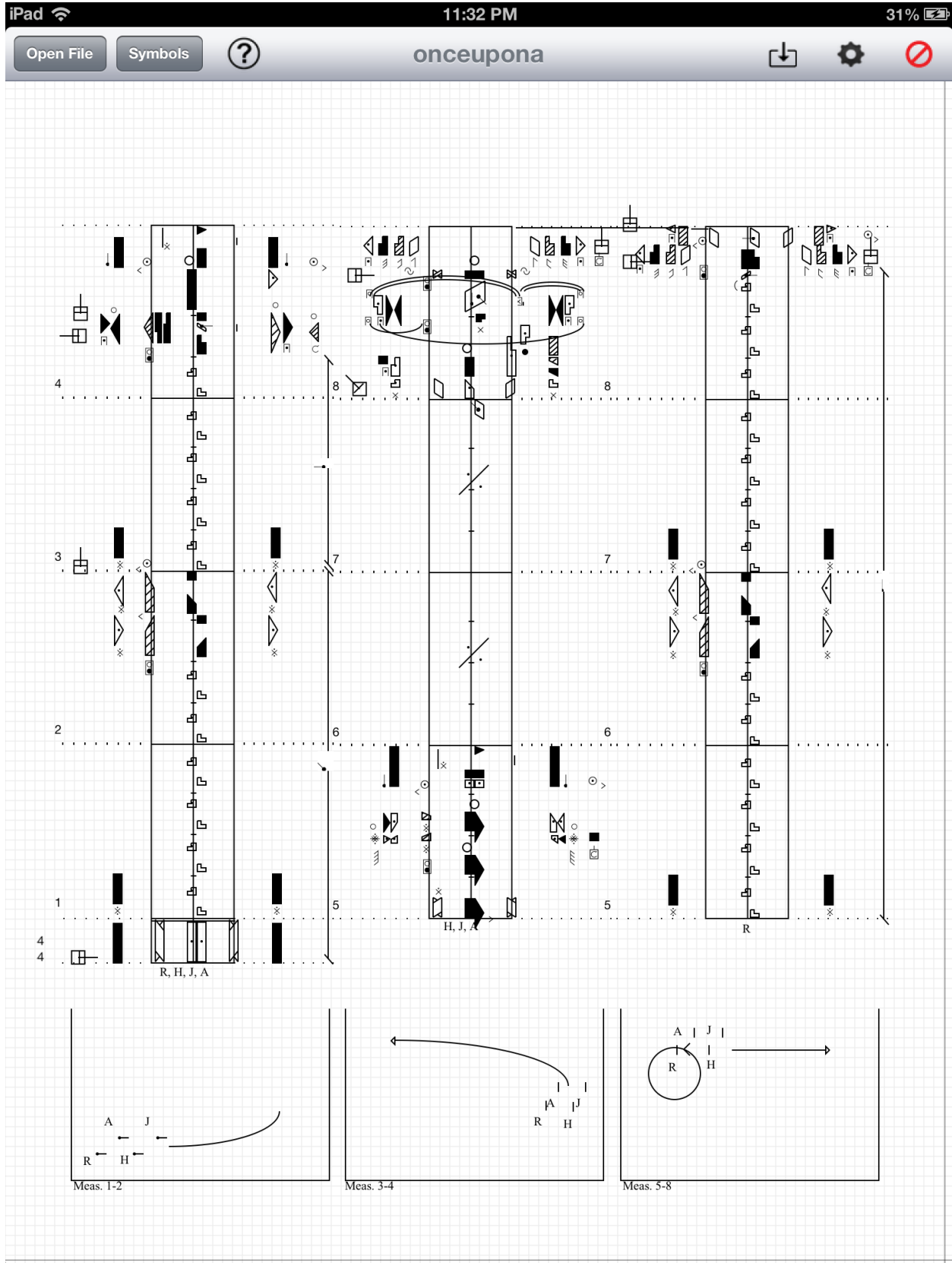
A zoomed-in close-up shot of the previous phrase with plain background and open Tools Menu.



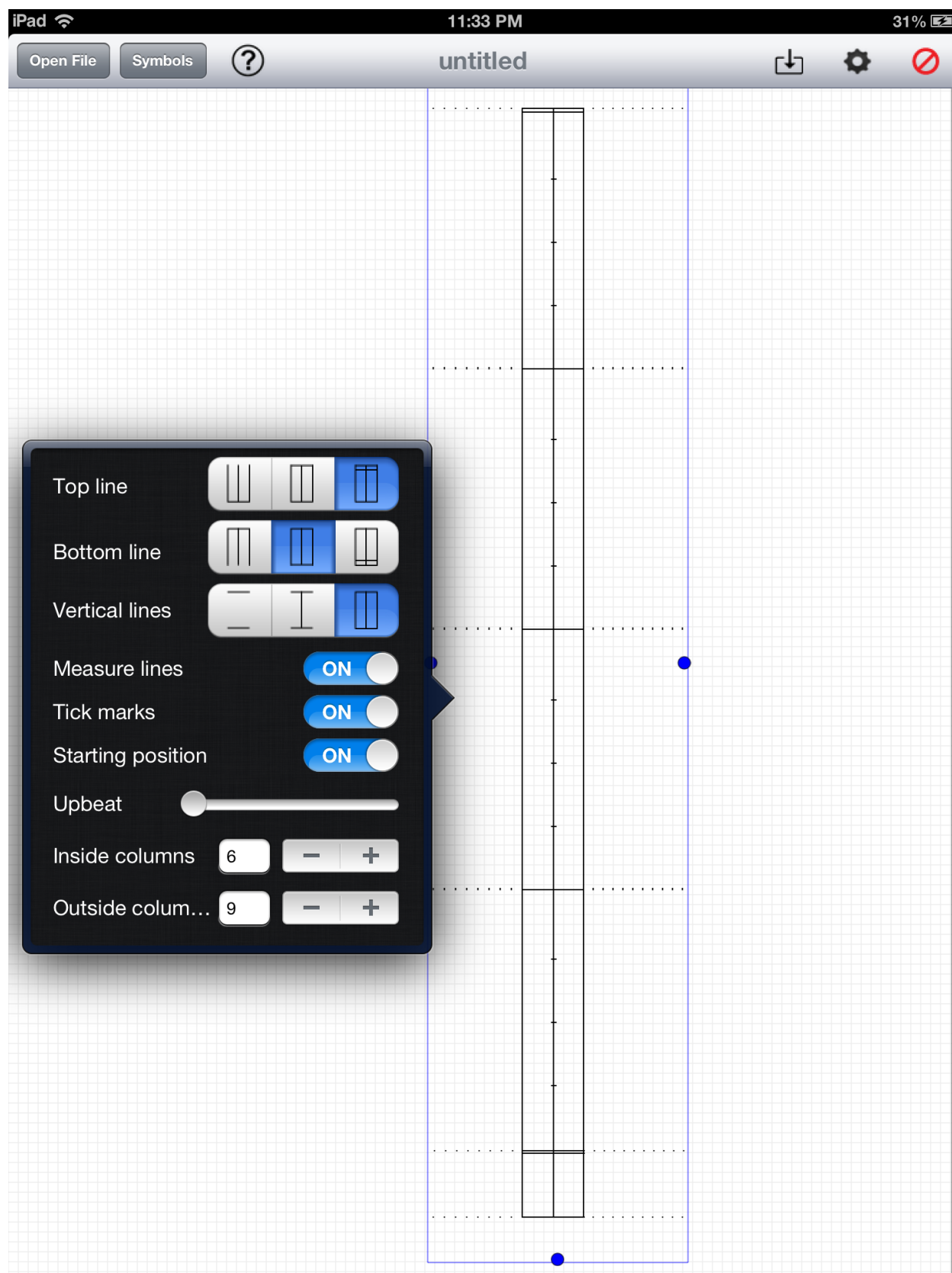
Pop-up determines characteristics of the floor plan.



Pink symbols emphasize arm movements. Pop-up can change characteristics of each measure.



Reader with graph paper background displaying a score.



A Labanotation staff. Pop-up defines the characteristics of the staff.